[redacted]
From: [redacted]
Sent: Wednesday, December 27, 2000 11:42 AM
To: mike buckley
Cc: [redacted] todd davison; matt miller; mark vieira [redacted] doug bellomo; [redacted] mary hudak
Subject: Fw: Information for Submittal to FEMA

Mike,

On behalf on Columbia Venture, this transmittal is being sent to FEMA in accord with your letters to Mrs. Kit Smith and [redacted] dated November 22, 2000. In those letters, FEMA provides for public comment through January 2, 2001, with follow-up comment through February 15, 2001. We advised FEMA prior to your letters that we were prepared to resolve FEMA's September 26, 2000, map revision in accord with the recent requests by the local governments. Columbia Venture remains ready to proceed with this effort. As a result of FEMA's decision to extend the process, we have developed additional information solidifying our earlier efforts.

Attached is a letter from Lockwood Greene dated December 20, 2000. It provides an additional basis for the final floodway determination being set in accord with 44CFR60.3(d)(2). In your review of Lockwood Greene's letter, please note that the resulting floodway configuration is the same as shown on FEMA's September 26, 2000, revised map for the Congaree River.

In addition to Lockwood Greene's letter, this transmittal includes by reference the correspondence that we have already provided to FEMA since September 26, 2000; and that should be in FEMA's official record. That correspondence includes the following:

- E-mails to FEMA dated October 12 and 26, November 6, 13, 16, 22, and 29 and December 8, 11, 12, 13, 18 and 20, 2000 from [redacted]
- The letter and attachments to you from [redacted] dated October 26, 2000.

The information we have provided to FEMA since September 26, 2000, substantiates that FEMA's September 26, 2000, revised map is inferior to its August 12, 1999, revision. The two primary reasons are

as indicated in [redacted] letter to you dated October 26, 2000. They are the lack of input from SCANA for the data used in FEMA's hydrologic analysis and the flawed assumptions used in FEMA's 2D hydraulic analysis. Once FEMA provides us the information that we requested, we can provide FEMA our final basis for its August 1999 revision, being the most appropriate map for FEMA to use. However, again, we are willing to resolve the September 26 map in accord with the subsequent requests from the local governments.

Our efforts since September 26 when FEMA disclosed its most recent revision to the public have been very consistent. First, after five years and five versions of a revised "FEMA" map for the Congaree River (not counting the unpublicized version for the South Carolina Department of Transportation in 1994), it is time for a resolution. On the other hand, we maintain that the most scientifically and technically correct map is the September 1999 revision.

We are committed, however, is to be a leader in starting a healing process within the local community that should come with a Letter of Final Determination from FEMA. The local community has been split apart during the last two years by the use of fallacious information by agencies and organizations for constant attacks on the character of FEMA and Columbia Venture personnel and their efforts. It is time for that to stop! For that reason, we are prepared to put aside our opinions about the inferiority of the FEMA's recent map as compared to the August 1999 map for the long-term good of the community. Therefore, Columbia Venture encourages FEMA to quickly resolve this long running issue involving the Congaree River map using the September 26, 2000, map in accord with the subsequent local government requests.

Please call me with any questions or comments.

Thanks,

[redacted]
Consultant to Columbia Venture
[redacted]

20 December 2000
Mr. Michael K. Buckley, PE
Director
Technical Services Division
Mitigation Directorate
Federal Emergency Management Agency
Washington, DC 20472
Dear Mr. Buckley:
Subject: Congaree River – Lexington and Richland Counties
26 September 2000 Map
The two attached files provide a summary of the previous information to FEMA and a technical justification of usage of the Lexington County HEC-2 model to establish the floodway in Lexington County 26 September 2000 map.
We look forward to resolution of the issues. Feel free to call [redacted] at [redacted] for clarifications or questions.
Sincere regards,
LOCKWOOD GREENE
[redacted]
Division Manager

Attachments:
1. Information Submitted to FEMA On 26 October 2000
2. Most Appropriate Floodway HEC-2 Model For Lexington County

cc:
[redacted]


Lexington HEC-2 Justification


Summary of Information Submitt


Executed Cover Letter PDF


header.htm


image001.wmz

LOCKWOOD GREENE
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20 December 2000

Mr Michael K. Buckley, PE
Director
Technical Services Division
Mitigation Directorate
Federal Emergency Management Agency
Washington, DC 20472

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Sincere regards,

LOCKWOOD GREENE

[redacted]

Division Manager

Attachments
1 Information Submitted to FEMA On 26 October 2000
2 Most Appropriate Floodway HEC-2 Model For Lexington County

cc [redacted]

Information Submitted to FEMA On 26 October 2000

- Cover letter from [redacted] to Mr. Michael Buckley submitting appeal dated 26 October 2000.
- Geotechnical evaluation "Realiability of Existing Levees Against Underseepage Piping" prepared by S&ME, dated 25 October 2000.
- "Appeal to Technical Information from FEMA presented 26 September 2000" dated 26 October 2000.
- Corrected HEC-2 Models.
- Conditional Letter of Map Revision HEC-2 Model.
- Summary of HEC-2 models including: Lexington model corrections, BFE comparisons, design top of levee elevations, levee versus BFE comparison, Lexington floodway versus FEMA floodway comparison, left over-bank model comparison, Conditional Letter of Map Revision comparison.
- Letter from [redacted] to Mr. Michael Buckley requesting review of Conditional Letter of Map Revision HEC-2 model dated 27 October 2000

MOST APPROPRIATE FLOODWAY HEC-2 MODEL FOR LEXINGTON COUNTY

FEMA used one HEC-2 calculation for the Lexington County Base Flood Elevation (BFE) that assumes no levee breach and another HEC-2 calculation for the Richland County BFE that assumes existing levee removal. FEMA used the Richland County equal conveyance reduction HEC-2 model to establish floodway in both counties Equal conveyance reduction for floodway determination is not appropriate in Lexington County based on regulations/guidelines, calibration, and flow patterns discussed below:

1 Regulations/Guidelines:

a. Page 7-4 of FEMA 37 states that the "equal conveyance reduction method should be considered, *if* it is technically appropriate."

b. Page 7-4 of FEMA 37 and 44§CFR60.3(d)(2) indicate that floodway will include . . . without cumulatively increasing the water-surface elevation at any point more than 1.0 foot above that of pre-floodway condition. Floodway surcharge elevation in Lexington is set below the BFE elevation Having the floodway surcharge elevation below the base flood elevation (BFE) is in conflict with 44§CFR60.3(d)(2) and with the definition cited at 44§CFR59.1 for floodway computations, which states: "Regulatory floodway means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height." The equal conveyance reduction computation illustrated on the 26 September 2000 FIRM map for Lexington County does not conform to the definition of a 1' maximum floodway surcharge above the BFE causing a technical incongruity.

c. Floodway in Lexington County is established on a method that is not consistent with the Lexington BFE

2 Calibration:

a. The Richland County HEC-2 model does not calibrate with the RMA-2 model used to form/create the basis of the Richland HEC-2 model The Richland HEC-2 model consistently yields a result 3.0 to 6.5 feet higher than the RMA-2 model for Richland County.

Table 1					
HEC-2 Station	Approximate 100 Yr WS Elevation				
	RMA-2		Richland HEC-2[1]	Difference	
	@ Levee	@ Bluff		@ Levee	@Bluff
253400 - E	137.0	133.5	140.0	3.0	6.5
249300 - D	135.0	132.0	138.0	3.0	6.0
246700 - C	133.0	132.0	137.5	4.5	5.5
234100 - B	130.5	130.5	134.5	4.0	4.0

b The Lexington HEC-2 more closely calibrates with the RMA-2 model The Lexington HEC-2 model approximates the RMA-2 model results within 0.5 to 1 0 feet, therefore, the Lexington HEC-2 model is the appropriate model to use for BFE and floodway computations in Lexington County on the basis of calibration to FEMA's RMA-2 model.

Table 2			
HEC-2 Station	Approximate 100 Yr WS Elevation		
	RMA-2 @ Levee	Lexington HEC-2	Difference
253400 - E	142 5	142.0	0 5
249300 - D	140.0	141.5	1 5
246700 - C	138.5	140.0	1 5
234100 - B	135.0	135.5	0 5

3 Flow Patterns

a. The steady state RMA-2 model yields a 5' higher 100-year flood elevation on the Lexington side of the levee versus the Richland side at the lower breach. The levee breach forms a weir that requires 5' of head to force the flow through the weir. Therefore, the flow is constricted from entering the levee interior. The photograph in Figure 1 taken from the 1976 breach confirms this weir/head concept. Note that this photo was taken after peak river stage

[1] From 26 September 2000 Richland County FIRM map.

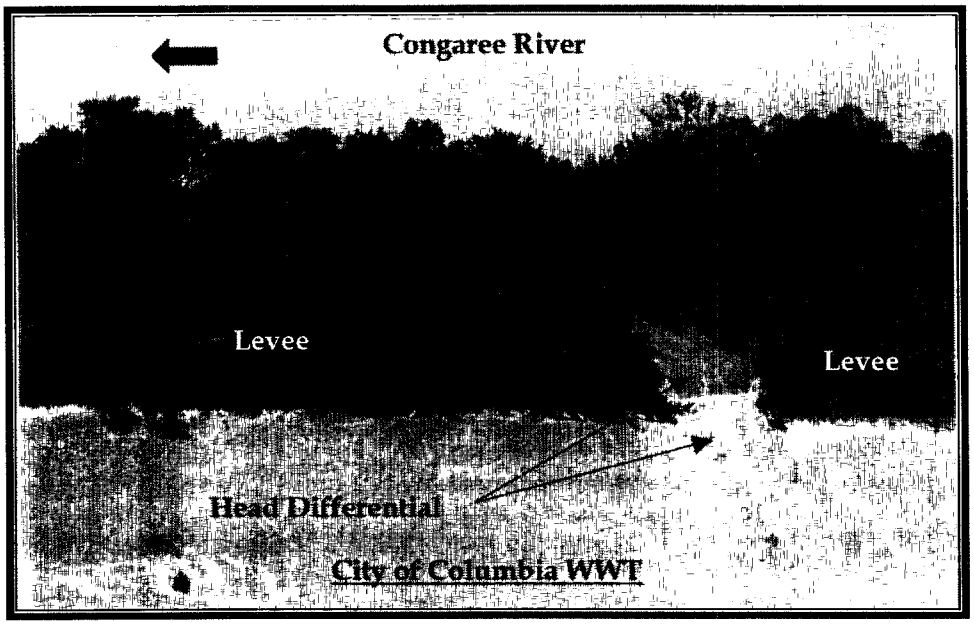

Figure 1 - 1976 Breach Photograph

b The FEMA provided double piping breach scenario (refin.geo and refin129.sol with Q=292,000) indicates approximately 25,700 cfs, 8.8% of the total flow of 292,000 cfs entering the levee interior. Compare this flow with the Richland County equal conveyance reduction HEC-2 that varied from 42629 cfs (16%) to 179583 (62%). Based on the RMA-2 model 91.2% of the flow would occur outside of the levee. This indicates that the flow and therefore the floodway is not split equally about the levee. This flow pattern more closely matches the Lexington County HEC-2 model.